

## REMARKS/ARGUMENTS

A minor addition is made to the specification. Claims 1, 6, 13 and 15 are amended. New claims 16-22 are submitted with this response. Claims 1-22 remain in the application.

Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and discussion below.

Claim 1 is amended to correct a minor editorial error.

Claim 6 is amended to correct a minor editorial errors and to recite that the inlet opening is circular. Support for this amendment can be found, for example, at page 4, lines 30-32, of the specification.

Claims 13 and 15 are amended to correct a minor editorial error and to correct antecedent basis problems.

New claims 16 and 19 depend from claims 1 and 6, respectively, and define a frusto-conical inlet passage defined by the housing and tapering inwardly to the inlet opening. Support for these claims can be found, for example, at page 4, lines 29-32, and FIGs. 1 and 3.

New claims 17 and 20 depend from claims 16 and 19, respectively, and define an integral protruberance extending outwardly from the outer surface of the housing for defining the inlet passage. Support for these claims can be found, for example, at Page 4, lines 29-32, and FIGs. 1 and 3.

New claims 18 and 21 depend from claims 2 and 7, respectively, and recite that the inlet opening is coplanar with the portion of the inner surface of the first portion of the housing defining the recess. Support for these claims can be found, for example, at FIGs. 3 and 4.

New claims 22-24 are directed to the arrangement of the collecting member in the housing. Claim 22 generally corresponds to original claim 2. Support for these claims can be found, for example, at page 5, line 15, to page 6, line 10, of the specification.

New claims 25-28 are directed to the cap. Claims 25 and 26 generally correspond to original claim 3. Support for claims 25-28 can be found, for example, at page 7, lines 17-25; page 8, lines 3-7; and FIGs. 5-7 of the specification.

The examiner objected to the disclosure, requiring that the first sentence be amended to indicate the current status of the parent application. Accordingly, the first paragraph is amended to include the number of the patent issuing from the parent of the present application.

In line 4 of claim 1, line 3 of claim 6, and line 4 of claim 13, the examiner requested that “housing an having” be changed to “housing having”. In line 1 of claim 6, the examiner requested that “An system” should be changed to “A system”. In line 15 of claim 5 [this should be claim 6], “aobut” should be changed to “about”.

The examiner rejected claims 13-15 under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The examiner noted that claims 13 and 15 recite “the body” in line 21 and line 16, respectively, which lacks antecedent basis in the claims, and that claim 15 recites “the adhesive coated surface” in line 19, which also lacks antecedent basis in the claim. The claim amendments herein overcome the examiner’s rejections.

The examiner rejected claims 1, 2, 4-7 and 9-12 under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,463,814 to Letarte et al. The examiner states that Letarte et al. disclose a bioaerosol slit impaction sampling device, comprising a housing having sealingly connected upper and lower portions (12,14) having a planar inner surface and a recess defining an enclosed chamber, an inlet opening in the first portion connected to a source of gas and particles, an outlet in the second portion connected to a vacuum source for drawing gas and particles through the housing, and a collecting member (16) in the housing between the inlet and outlet with an upper adhesive coating (20) adjacent to the inlet opening, wherein the longest dimension of the recess is less than the length of the collecting member so that the portions engage the collecting member at two spaced points (citing the Figures; col. 3, line 3 to col. 4, line 5; col. 4, lines 48-53 of Letarte et al.). The examiner notes that the inner surface of the second portion defines opposed slots extending from the recess for receiving the collecting member, and contends the slots have a depth less than the thickness of the member so that the first portion engages it. The examiner correctly indicates that Letarte et al. fails to disclose that the distance between the inlet opening and the collecting member surface is less than about 0.02”, that the diameter of the inlet opening is less than about 0.2”, and that the ratio of the distance to the diameter is less than about 0.1. However, the examiner concludes that, because Letarte et al. discloses the relative size of the collecting member as 25x75mm, one having ordinary skill in the art would understand that Figures 1-3 of Letarte et al. (and not 4) represent approximate relative dimensions because of the accurate depiction of the collecting member and apparent real-life appearance of the device, and would be motivated to use the depicted inlet opening width (less than 0.2”), distance between the opening and member (less than 0.02”) and relative ratio of less than 0.1 from a study of the drawings.

The examiner rejected claims 1-5, 8 and 10 under 35 U.S.C. §103(a) as obvious over Baxter in view of U.S. Patent No. 4,796,475 to Marpel. The examiner states that Baxter discloses all of the limitations of the claims except that the ratio of the distance between the inlet opening and the surface of the collecting member to the diameter of the inlet opening is less than about 0.1. The examiner states that Baxter discloses a ratio of less than 0.5 for capturing particles down to greater than 2.0 microns in size and further teaches that the slit size, geometry, and the distance of the collection media from the slit exit are important in capturing particles of a preferred size (citing Baxter at col. 3, lines 39-51). The examiner concludes it would have been

obvious to modify the inlet and collection media arrangement of the Baxter device in order to provide optimum conditions for capturing a preferred particle size using the above teachings.

The Applicant respectfully submits that claim 1 patentably distinguishes from the above references. Claim 1, as amended, recites, *inter alia*, a ratio of the distance between the inlet opening and the adhesive-coated surface to the diameter of the inlet opening (S/W) of less than about 0.1. This feature is not taught or suggested by Letarte et al. or by Baxter in view of Marpel.

Letarte et al. is directed to a slit impaction air sampling device. Letarte does not, as the examiner contends, suggest the S/W ratio recited in claim 1 by mere mention of the size of the collecting member at 25x75mm. In fact, this is the only dimension mentioned in Letarte. The examiner somehow gleans from this disclosure and the Figures of Letarte et al. that "because of the accurate depiction of the collecting member and apparent real-life appearance of the device", one of ordinary skill would be motivated to use the depicted inlet opening width, distance between the opening and member, and relative ratio of less than 0.1 from a study of the drawings.

The Applicants respectfully submit that a review of Letarte et al. does not support the examiner's position. There is simply no suggestion or motivation in Letarte et al. based on the examiner's reliance on the relative approximate dimensions of Letarte et al. for the claimed S/W ratio. Specifically, the examiner cites the 25x75 mm size of the collecting member as a reference. However, the collecting members shown in FIGs. 1 and 2 are different sizes and are not even close to the relative dimensions suggested by the examiner. FIG. 1 shows a collecting member that is more than 4 times longer than it is wide, and FIG. 2 shows a collecting member that is more than 7 times longer than it is wide. The drawings are not only not to scale, but they are also different. Thus, the Applicants respectfully submit that rejection based on Letarte et al. should be withdrawn.

Referring now to Baxter, the Baxter patent is directed to a slit impaction sampler for preferentially collecting particles greater than 2  $\mu$ m in size. (See Baxter at column 3, lines 39-43). Baxter in fact rejects collection of particles less than 2  $\mu$ m. To accomplish this, Baxter discloses an S/W range of 0.33-1.4. As the examiner correctly noted in his Office Action, Baxter fails to teach an S/W ratio of less than about 0.1. The examiner contends that because Baxter discloses a ratio of less than 0.5 for capturing particles down to 2 microns and teaches that the slit size, geometry, and distance of the collection media from the slit are important in capturing particles of a preferred size, that it would have been obvious to modify the inlet and collection media arrangement of Baxter to provide optimum conditions for capturing a preferred particle size. The examiner's position reads too much into Baxter. The applicants respectfully submit that the presently claimed S/W of 0.1 is, practically speaking, a long way from the lower end of Baxter's range. Moreover, while it is questionable that the Baxter device would even work at the lower end of the disclosed range, since Baxter is interested in avoiding capture of particles small than 2  $\mu$ m, there is no suggestion to go below the S/W of 0.45 taught by Baxter. Accordingly, applicants respectfully submit that claim 1 is not obvious in view of Baxter.

Claims 2-5 of the present application depend from claim 1. In addition to the distinguishing features recited in claim 1 and discussed above, the present invention has additional advantageous features defined in the dependent claims which further distinguish the present invention over the prior art. The patents to Letarte et al, Baxter and Marpel do not disclose or suggest these features with their many advantages.

The examiner rejected claims 6, 7, 9, 11 and 12 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,693,895 to Baxter. The examiner states that Baxter teaches a system for collecting particles having a diameter of over 2 microns from a gas stream by flowing the stream through an impaction sampler comprising a housing cell (44) defining a chamber, a slit inlet (64) in an upper housing portion (58), an outlet (54) in a lower housing portion (48), a vacuum pump (40) connected to the outlet for drawing gas through the housing, a flexible tube (42) connected to the outlet, a rigid tube connected to the pump and the other end of the flexible tube (citing Figure 2 of Baxter), and a collecting member (45) having an adhesive surface (46) disposed inside the housing between the inlet and outlet for collecting particles. The examiner notes that the upper and lower housing portions of Baxter are connected by sealing tape (53) and contain recesses defined by shoulders (56) and peripheral lip (62) (citing the Figures of Baxter, as well as col. 1, lines 12-27; col. 2, lines 35-43; col. 3, lines 23-62; col. 5, line 10 to col. 6, line 6). The examiner contends that the recesses have a smaller width than the collecting member for engaging the member at opposite points when the housing is sealed. The examiner adds, citing col. 5, lines 51-57 of Baxter, that the lower diameter of the Baxter slit can be up to 1.1 mm (0.043") and the distance between the slit and the tacky surface of the collecting member can be 0.5-1.5 mm (0.0197"-0.059"), allowing a ratio of less than 0.5.

The examiner rejected claims 6, 7 and 9 under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,304,125 to Leith. The examiner states that Leith teaches a system for collecting particles having diameters from 2-6 microns (citing Figure 7 of Leith) from a gas stream by flowing the stream through an impaction sampler comprising a housing (10) defining a chamber (11), an inlet (12) in an upper housing portion (14), an outlet (13) in a lower housing portion (15), a vacuum source connected to the outlet for drawing gas through the housing, and a collecting member (21) coated with a sticking agent disposed inside the housing between the inlet and outlet for collecting particles. The examiner notes that the upper and lower housing portions are sealed with O-rings (16). The examiner contends the Leith device contains recesses defined by a steel band (44) when combined with the upper portion and an insert (40) shoulder when combined with the lower portion (citing the Figures of Leith, as well as col. 5, lines 6-64; col 8, lines 18-45; col. 9, lines 48-56). The examiner adds that the recesses have a smaller width than the collecting member for engaging the member at opposite points when the housing is sealed. The examiner further states that the diameter of the inlet opening can be from 8-14 mm and the distance between the inlet and the tacky surface of the collecting member can be from about 12-15 mm, allowing a ratio of less than 0.5 (citing Leith at col. 5, lines 15-19 and 58-64). The examiner refers to Figure 7 for the size distribution of particles captured by the Leith impactor, with the 50% cutoff size being 3 microns and smaller particles being captured at a lower efficiency.

The Applicants respectfully submit that Baxter and Leith do not anticipate claim 6. Claims 6 recites, inter alia, a circular inlet opening and a distance between the inlet opening and the adhesive-coated surface of the collecting member of less than about 0.08 inches. These features are not taught by the references. In fact, Baxter teaches away from the use of round, or circular nozzles. (See Baxter at column 2, lines 26-31). Moreover, Leith does not suggest a smaller jet-to-plate distance since Leith is directed to an apparatus for administering particulate aerosols to the lungs and is designed to capture large, non-respirable particles. Leith notes that particles are considered respirable if they are smaller than about 4.7  $\mu\text{m}$  in aerodynamic diameter. (See Leith at column 7, lines 59-60). Fig. 7, cited by the examiner, shows that the Leith device allowed almost all particles smaller than 2  $\mu\text{m}$  to pass. A shorter jet-to-plate distance would not meet this goal. Thus, Leith does not provide the motivation to meet this claim requirement.

Thus, since Baxter and Leith fail to show or suggest each and every element of the invention as claimed in claim 6, the references cannot anticipate or render obvious these claims.

The examiner rejected claims 13-15 under 35 U.S.C. §103(a) as obvious over Baxter in view of U.S. Patent No. 4,796,475 to Marpel. The examiner states that Baxter discloses all of the limitations of the claims except that the collection system further comprises a cap member having a pass through opening and sealingly connected to the first portion of the housing in fluid communication. The examiner relies on Marpel for teaching an air sampling impactor comprising a housing formed by upper and lower covers (13, 14), a collection plate (27) disposed under an inlet opening (20) in the upper cover, and a cap member (61) sealed over the upper cover and having an opening (63) in fluid communication with the housing. The examiner notes the upper cover forms an integral protuberance of the housing with an inlet passage tapering inwardly to the inlet, and the cap member includes an outer rim for receiving the protuberance. The examiner cites the embodiment of Figure 3 for O-rings used to seal the cap member to the body. The examiner concludes it would have been obvious to modify the impactor of Baxter by including a cap member as disclosed by Marpel in order to provide additional particle removal using a two stage impactor in a very compact unit.

The Applicants submit that claims 13-15 are not obvious over Baxter in view of Marpel. Claims 13-15 define a method wherein a cap member has a pass through opening in direct fluid communication with the inlet opening in the housing and recites providing a flexible hose connected at one end to the opening in the cap member. This feature provides significant, nonobvious advantages, including a unique method for capturing particles from hard to access locations using the hose or wand, or more accurately calibrating gas flow rate.

Marpel is directed to a cascade impactor. For this reason, the Marpel cover 61, referenced by the examiner, carries an impaction plate 62. The inlet orifice 63 of the cover 61 is aligned with the impaction plate in the cover 61 so that incoming air impinges on the impaction plate 62. (See Marpel at column 3, lines 23-36, and FIG. 2). Further, Marpel does not show or suggest a flexible hose connected to an opening in the cover 61. This is because Marpel is directed to a cascade impactor and fails to recognize and thus realize the advantages which the Applicants achieve with their invention. Therefore, Applicants believe that claims 13-15 distinguish over Baxter in view of Marpel.

Finally, the examiner rejected claims 1, 4-6 and 9-12 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 3, 8, 11 and 12 of U.S. Patent No. 6,692,553. While the applicants dispute the examiner's conclusion, a terminal disclaimer is enclosed in order to advance the application.

For the foregoing reasons, the applicant's respectfully submit that the inventions claimed in the present application are not anticipated nor fairly taught or suggested by any of the references cited by the examiner, either alone or in any reasonable combination suggested by the prior art. Reconsideration and withdrawal of the rejections and allowance of claims 1-22 at an early date are respectfully requested.

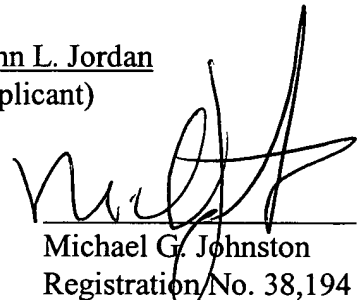
If the Examiner has any questions about the present Amendment or anticipates finally rejecting any claim of the present application, a telephone interview is requested.

Respectfully submitted,

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